

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing Of Claims:

Please amend the claims as follows:

1. (Currently Amended) A molecular modeling system for use in assembling a plurality of structural elements comprising:

a node element comprising:

a body;

at least one or more connection port[[s]] disposed relative to the body, at least one connection port capable of being and configured to be coupled to an adjacent structural element;

a computational unit disposed within the body, wherein the computational unit receives configured to receive information of physical characteristics of the node element from the connection port; the computational unit including:

a memory device for storing embedded rules of the body and operational instructions associated with functioning of the node element, the instructions including:

unique characteristics of the node element,

input data from a communications device,

output data from a transmission device,

communication rules for determining a state of the body,

rules for building the body, and

computational functions for processing of the instructions

and interpreting the communication rules and the rules for building; and

a the communications device capable of providing data from the computational unit to an external computer system; and

a bond element comprising:

a body;

a first and a second connection port disposed relative to the body, at least one of the first and the second connection ports capable of being coupled to the node element; and

a computational unit disposed within the body, wherein the computational unit receives information of physical characteristics of the bond element from at least one of the first and second connection ports.

2. (Previously Presented) The molecular modeling system of claim 1, wherein the communications device is capable of providing node element information.
3. (Currently Amended) The molecular modeling system of claim 1, wherein the adjacent structural element comprises a bond element.
4. (Currently Amended) The molecular modeling system of claim 1, wherein the computational unit of the node element uses the information of physical characteristics to determine a topology of the node element.
5. (Currently Amended) The molecular modeling system of claim 4, wherein the information of physical characteristics is obtained from a sensor disposed within the node element.
6. (Currently Amended) The molecular modeling system of claim 5, wherein the sensor detects information about at least one of movement of the node element with respect to a bond element, rotational orientation with respect to the connection port, movement of the node element with respect to one of the structural elements, at least one of a position and a ~~or~~ movement of the node element with respect to an external spatial orientation reference point, and physical stress upon the node element.
7. (Currently Amended) The molecular modeling system of claim 6, wherein the sensor comprises at least one of a rotational sensor, an accelerometer, a compass, an inclinometer, a magnetometer, and a gyroscope.

8. (Cancelled)

9. (Currently Amended) The molecular modeling system of claim 6, wherein the sensor is configured to store[[s]] ~~or~~ and provide[[s]] information associated with ~~of~~ changes in physical characteristics of the node element.

10. (Previously Presented) The molecular modeling system of claim 1, wherein the node element further comprises a control device that manipulates a physical characteristic of the connection port.

11. (Currently Amended) The molecular modeling system of claim 10, wherein the control device comprises at least one from a set of an actuator, a vibrating unit, ~~or~~ and a light emitting diode.

12. (Currently Amended) The molecular modeling system of claim 2, wherein the communications device is configured to transfer[[s]] data from the computational unit to one of the structural elements.

13. (Canceled)

14. (Currently Amended) The molecular modeling system of claim 1, wherein the communications device exchanges information between the external computer system and the computational unit.

15. (Previously Presented) The molecular modeling system of claim 1, wherein the node element further comprises a power transmission interface capable of transferring power from an external source through at least one of the connection ports and to the node element.

16. (Currently Amended) The molecular modeling system node element of claim 1, wherein the communications device comprises a wireless transmitter.

17. (Currently Amended) A molecular modeling system for use in assembling a plurality of structural elements comprising:

a bond element comprising:

a body;

a first and a second connection port disposed relative to the body, at least one of the first and the second connection ports capable of being coupled to an adjacent structural element;

a computational unit disposed within the body, wherein the computational unit receives information of physical characteristics of the bond element from one of the first ~~or~~ and second connection ports; and

a communications device capable of providing data from the computational unit to other structural elements ~~an external computer system~~; and

a node element comprising:

a body;

at least one ~~or more~~ connection port[[s]] disposed relative to the body, at least one connection port capable of being coupled to the bond element; and

a computational unit disposed within the body, ~~wherein the computational unit receives~~ configured to receive information of physical characteristics of the node element from the connection port, the computational unit including:

a computational device; and

a memory device for storing embedded rules of the body and operational instructions for functioning of the node element, the instructions including:

unique characteristics of the node element,

input data from a communications device,

output data from a transmission device,

communication rules for determining state of the body,

rules for building the body, and

computational functions for processing of the instructions
and interpreting the communication rules and rules for building.

18. (Currently Amended) The molecular modeling system of claim 17, wherein the bond element further comprises a sensor that detects information about at least one of movement of the bond element with respect to a structural element, rotational orientation with respect to the connection port, a position of the bond element, ~~or~~ and a movement of the bond element with respect to an external spatial orientation reference point, and physical stress upon the bond element.

19. (Currently Amended) The molecular modeling system of claim 18, wherein the sensor comprises at least one of a rotational sensor, an accelerometer, a compass, an inclinometer, a magnetometer, and a gyroscope.

20. (Withdrawn) A hybrid modeling system comprising:
a physical model comprising at least one node element capable of being coupled to a structural element, the node element comprising a computational unit including information of physical characteristics of the node element; and
a virtual model stored on a computer system, wherein the information of physical characteristics of the node element is electronically provided from the physical model to the virtual model.

21. (Withdrawn) The modeling system of claim 20 wherein the information of physical characteristics relates to a topology of the node element.

22. (Withdrawn) The modeling system of claim 20 wherein the computational unit of the node element receives the information of physical characteristics from a sensor disposed within or connected to the node element.

23. (Withdrawn) The modeling system of claim 22 comprising a software program running on the computational unit and in communication with a software program running on the computer system of the virtual model.
24. (Withdrawn) The modeling system of claim 23 wherein the software program of the computer system includes a graphic display visualization unit.
25. (Withdrawn) The modeling system of claim 24 wherein the visualization unit presents to a user a graphic display of at least a portion of the physical model, at least a portion of the virtual model, or at least portions of the physical and virtual models.
26. (Withdrawn) The modeling system of claim 24 wherein the visualization unit displays at least one of structure information, energetic information, and physical properties of the hybrid model.
27. (Withdrawn) The modeling system of claim 20 further comprising a communications system that provides information from the computer system of the virtual model to the computational unit of the physical model.
28. (Withdrawn) The modeling system of claim 27 wherein the information provided to the node element from the computer system actuates a control device disposed within or adjacent to the node element.
29. (Withdrawn) The modeling system of claim 28 wherein the information is wirelessly communicated from the computer system.
30. (Withdrawn) The modeling system of claim 28 wherein the actuation of the control device corresponds to a virtual characteristic of the virtual model.
31. (Canceled)

32. (Currently Amended) A structural modeling kit for use in assembling a plurality of structural elements comprising:

a plurality of ~~one or more~~ bond elements, each bond element comprising:

a body; and

a first and a second connection port disposed relative to the body of the bond element; and

a plurality of ~~one or more~~ node elements, each node element comprising:

a body;

a node connection port disposed relative to the body of the node element, capable of being coupled to the bond element; and

a computational unit disposed within the body of the node element, wherein the computational unit receives information of physical characteristics of the node element from the node connection port; wherein at least one of the node elements and the bond elements comprises a communications device capable of providing the information of physical characteristics to an external computer system; ~~and~~ wherein at least one node element and at least one bond element are coupled to correspond to at least a portion of a molecular model; and wherein the computational unit including:

a computational device; and

a memory device for storing embedded rules of the body and operational instructions for functioning of the node element, the instructions including:

unique characteristics of the node element,

input data from a communications device,

output data from a transmission device,

communication rules for determining state of the body,

rules for building the body, and

computational functions for processing of the instructions

and interpreting the communication rules and rules for building.

33. (Canceled)

34. (Withdrawn) A method of incorporating physical information into a virtual model comprising:

providing a modeling system including:

a physical model comprising at least one node element capable of being coupled to a structural element, the node element comprising a computational unit including information of physical characteristics of the node element; and

a virtual model stored on a computer system; electronically providing the information of physical characteristics of the node element from the physical model to the virtual model.